13/m

RELATIVE EFFECTIVENESS OF VARIATIONS IN MICROTEACHING COMPONENTS

AN EXPERIMENTAL STUDY

3051

MT-10

Microteaching Research Project

Relative Effectiveness of Variations in Microteaching Components

An Experimental Study

R. C. DAS
B. K. PASSI
N. K. JANGIRA
AJIT SINGH

S.C.E.R.T., West Bengal
Library
Calcutta
25/3, B. C. Road

विद्ययाऽमृतमश्नुते

एन सी ई आर टी
NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
National Council of Educational Research and Training

March 1984
Phalguna 1905

PD-1T-SD. VK

S.C.E.R.T., West Bengal
Date... 12/12/84...
Acc. No... 3051......

371
DAS

© *National Council of Educational Research and Training, 1984*

Cover Design : C. P. TANDON

Rs 9.30 $ 2 80 £ 0.95

Published at the Publication Department by C. Ramachandran, Secretary, National Council of Educational Research and Training, Sri Aurobindo Marg, New Delhi 110016 and Printed at Arcee Press, New Delhi 110055

FOREWORD

The teacher performs the most vital function in the educational system. He plays multiple roles both inside and outside the classroom to ensure that the set of stipulated educational goals is realised. The complexity of his roles demands competence of a very high order, and this competence depends on his academic accomplishments and the professional preparation he receives in a teacher education institution. The quality of the latter, in turn, depends on the quality of the teacher education curriculum and the effectiveness of its transaction. The NCTE curriculum framework, and the programmes spearheaded by the Department of Teacher Education in the NCERT, are aimed at improving the quality of teacher preparation.

Microteaching is an innovative technique which uses the mastery learning approach for developing teacher competence. The Department of Teacher Education has initiated a series of research projects in microteaching with a view to developing an Indian frame of reference. The present study "The Relative Effectiveness of Variations in Microteaching Components in Developing General Teaching Competence in Student Teachers" is the third in the series. The fact that 16 teacher training colleges and university departments of education, from different parts of the country, participated in this project points to the cooperative nature of this research.

This study, together with the earlier two studies and the forthcoming research in this area, it is hoped, will go a long way in improving teacher education programme in general and student teaching, in particular. I am sure the present study, will stimulate research workers in this area and provide guidelines to teacher educators in the country. The initiative taken by Prof. R.C. Das, Head, Department of Teacher Education, supported by his team comprising Prof. B.K. Passi, Dr. N.K. Jangira, and Dr. Ajit Singh, in undertaking this project, is to be appreciated. I may also take this opportunity to thank the heads and the teacher educators of the participating institutions without whose active cooperation the study would not have been possible.

P.L. Malhotra
Director
National Council of Educational
Research and Training

New Delhi
January 1984

PREFACE

Teacher preparation in our country suffers from several inadequacies. It is believed that whatever is needed in the classroom is not taught in the teacher training institutions and whatever is taught is not applicable to the classroom. The gap between theory and practice has become proverbial. Several programmes have been initiated to bridge the gap between theory and practice as a part of making the teacher training programme relevant to the classroom needs. Skill-based programmes of student teaching have been envisaged. The Department of Teacher Education, in collaboration with the Department of Education, Indore University, Indore, initiated a long-term programme of microteaching to strengthen the existing student teaching programme. The programme includes both research and development activities.

As a part of research programme, the Department has already completed two research projects, namely, "The Study of the Effectiveness of Microteaching in Developing General Teaching Competence of the Student-Teachers" and "Differential Effectiveness of Microteaching Components". The present project "Relative Effectiveness of Variations in Microteaching Components—An Experimental Study" is a continuation of the latter. Some of the experimental treatments have been replicated with better design and analysis. A few new variations in components of microteaching have also been tried out experimentally. The project was designed in 1977. Fifteen Colleges of Education participated in the main project, while another eight institutions completed allied studies connected with different aspects of microteaching. The consolidated report of the project has been given in Section I. Section II comprises abstracts of individual studies, and Section III covers allied studies. The Department is releasing the report of the research project for the use of research workers and teacher-educators. The findings provide useful clues to further refining microteaching as well as for adapting microteaching to the conditions obtaining in different colleges of education, university departments of education for using the innovation. It is hoped that this study will contribute to the improvement of the practice of microteaching, and simultaneously, it will stimulate other research workers in the area to conduct further research.

The Department owes its gratitude to ERIC for financing the project. We thank Dr. B.K. Passi, Professor and Head, Department of Education, Indore University, Indore, for collaborating with us in the project. Our thanks are also due to the principals of the colleges of education and their colleagues for active collaboration in conducting the study.

R.C. Das
Head
Department of Teacher Education

PARTICIPANTS : INSTITUTIONS AND PERSONS

1. Faculty of Education, B.H.U., Varanasi (U.P.).	1. Dr. T.S. Rao 2. Dr. T. Singh
2. Government Central Pedagogical Institute, Allahabad (U.P.).	Shri S.N. Rai
3. Sri Ramakrishna Mission Vidyalaya Teachers' College, Coimbatore (Tamil Nadu).	1. Dr. H. Visvesaran 2. Dr. T.R. Sundararaja Rao
4. Department of Education, University of Indore, Indore (M.P.).	1. Dr. (Mrs.) S. Bhouraskar 2. Shri P.L. Kirkire
5. Saraswati College of Education, Charkhi Dadri (Haryana).	1. Shri Davinder Pratap Asija 2. Mrs. Nirmal Kumari
6. Shri R.P. Ananda College of Education, Borsad (Gujarat).	Dr. Punambhai Patel
7. C.R. College of Education, Rohtak (Haryana).	1. Dr. R.C. Hooda 2. Shri P.S. Anand
8. Department of Post-Graduate Studies in Education, Karnataka University, Dharwar.	Dr. G.M. Patted
9. S.N.D.T. College of Education for Women, Karve Road, Pune.	1. Shri A.G. Bhalwanker 2. Smt. M.M. Mahajan
10. Sree Siddaganga College of Education, Tumkur (Karnataka).	Shri R.C. Sadasivan
11. Adarsh Comprehensive College of Education and Research, Pune.	Shri A.N. Joshi
12. H.J. College of Education, Bombay.	Mrs. C.G.D. Lima

. Chembur Comprehensive College of Education, Bombay.	Miss Vijaya Kamat
4. Regional College of Education, Bhopal.	1. Shri V.P. Gupta 2. Dr. (Miss) R. Datta
15. D.P.B. Dayanand College of Education, Solapur.	Smt. S. Patil
16. B.T.T. College, Gandhi Vidya Mandir, Sardarshahar (Rajasthan).	Dr. D.L. Sharma
17. Government Training College, Trivandrum (Kerala).	Dr. S.R. Nair
18. R.V. Teachers' College, Bangalore, (Karnataka).	Shri S. Bhaskara
19. B.E.S. College of Education, Bangalore.	Shri Puttaramaiah
20. Post-Graduate Department of Education, Patna University, Patna (Bihar).	Dr. R.N.P. Barial
21. Department of Education, Hindu College, Moradabad.	Shri A.N. Joshi
22. North-Eastern Hill University, Nagaland Campus, Kohima.	Dr. K.K. Sharma

CONTENTS

Pages

FOREWORD iii
PREFACE v
LIST OF PARTICIPANTS vii
LIST OF TABLES xi
ABBREVIATIONS xii

Section-I 1

1.0 Introduction 1

1.1 Microteaching 1
1.2 Effectiveness Research 3
1.3 Effectiveness of Components Variations 4
1.4 Statement of the Problem 8
1.5 Objectives 8
1.6 Hypotheses 9

2.0 Method and Procedure 11

2.1 Design 11
2.2 Sample 11
2.3 Tools Used 13
2.4 Experimental Treatment 14
2.5 Experimental Treatment Allocation 16
2.6 Sequence of Events 17
2.7 Analysis of Data (Institution-wise) 19

3.0 The Results 21

3.1 Sources of Feedback 21
3.2 Retention of General Teaching Competence 25
3.3 Student-Teachers' Attitude and Feedback 25
3.4 Student-Teachers' Anxiety Level and Feedback 26
3.5 Perceptual and Symbolic Modelling 27
3.6 Retention of General Teaching Competence 29

3.7 Student-Teachers' Attitude and Modelling 29
3.8 Conditions (Simulated vs. Real Classroom) 30
3.9 Conditions and Anxiety Level of Student-Teachers 31
3.10 Change in the Teaching Unit 32
3.11 Variation in Teaching Unit and Student-Teachers' Attitudes 33
3.12 Variation in Class Size 33
3.13 Microteaching Cycles and Mastery Level of Teaching Skills 35

3.14 Findings 36

Section-II 37

- Abstracts of Sixteen Studies 37

Section-III 56

Studies and Development Abstracts 56

REFERENCES 63

LIST OF TABLES

Table		Pages
2.1	Participant Institutions, Student-Teachers and the Researchers Involved in the Study	11
2.2	Institutions and their Respective MMT Experimental Treatments	16
2.3	The Schematic Sequence of Events	18
2.4	Time Schedule	19
3.1	Significance of Difference between Mean GTC Scores of SMT and MMT Groups due to Variation in the Source of Feedback	23
3.2	The Difference between Means of Attitude towards Teaching Scores of SMT and MMT Groups Receiving Different Types of Feedback	26
3.3	Significance of Difference between Means of Gain Scores on Anxiety for SMT and MMT Groups	27
3.4	The Difference between Mean Gain Score on GTC of SMT (Perceptual Modelling) and MMT (Symbolic Modelling) Groups	28
3.5	The Difference between Mean Attitude towards Teaching Scores of SMT and MMT Groups	30
3.6	The Difference between the Mean of Gain Scores on GTC for SMT and MMT Groups (Simulated and Real Classroom Conditions)	31
3.7	The Difference between Mean Scores on Anxiety Level of SMT (Simulated Conditions) and MMT (Real Conditions) Groups	31
3.8	The Difference between Mean Gain Scores on GTC of SMT and MMT ('reteach' with the different teaching unit) Groups	32
3.9	The Difference between the Mean Attitude towards Teaching Scores of SMT and MMT ('reteach' with different teaching unit) Groups	33
3.10	The Difference between Mean Gain Scores on GTC (G_1, G_2, and G_3) and the Level of Anxiety of SMT and MMT (large class size) Groups	34
3.11	Number of Microteaching Cycles Completed by the Student-Teachers	35

ABBREVIATIONS

ATAI —Ahluwalia's Teacher Attitude Inventory
BGTCS —Baroda General Teaching Competence Scale
STAI —State-Trait Anxiety Inventory
GTC —General Teaching Competence
G_1 —Post-test I — Pre-test, gain in GTC
G_2 —Post-test II — Pre-test I, gain in GTC
G_3 —Post-test II — Pre-test, gain in GTC
MT —Microteaching Technique
MMT —Modified Microteaching Technique
SMT —Standard Microteaching Technique
TT —Traditional Teaching
NCERT —National Council of Educational Research and Training

Section-I

1.0 INTRODUCTION

1.1 Microteaching

Teaching is a unique and complex activity. It is mysterious in its successes and failures. A peep into research on teachers and teaching effectiveness conducted during the current century reveals that majority of the studies in this area were directed towards finding out characteristics of good and bad teachers. The dominant theme of these studies had been the search for good teacher. But the yield has not been high (Getzel and Jackson, 1963; Garner, 1973; Morrison and McIntyre, 1973). These studies were conducted with the hope that if we were able to identify the characteristics of good teachers, it would be possible to bring about qualitative improvement of teaching in schools by recruiting teachers with characteristics associated with good teaching. In these studies, scores on teacher characteristics like personality, intelligence, values, selfconcept, creativity, attitude towards teaching were related to teaching practice and in theory. The outcome of these studies has usually been that the teachers who are rated high manifest a wide range of personality and cognitive characteristics and that there is no such thing as a good teaching personality (Brown, 1975). By implication, teaching competence has to be developed in the prospective teachers through systematic teacher education programmes.

An examination of the prevalent teacher education programmes reveals their glaring inadequacy. The reports of the various commissions and committees on education and teacher education bear testimony to this disturbing fact (Education Commission 1949, 1952, 1966). The teacher education programmes are theory based. As a consequence the gap between theory and practice of teaching has widened (Ministry of Education, 1964, NCERT, 1978, Jangira, 1978, 1979). The student teaching programmes have earned a stigma of rituality without any practical effectiveness. The situation called for an examination of the shortcomings in the existing student teaching programmes and designing of strategies for overcoming the same.

Several innovations have been designed to strengthen the programmes of student teaching. Microteaching is one of the recent ones. It is relatively a new departure in teacher training. It employs analytical approach to teaching and training (Jangira 1983, 1984). Teaching is considered as a complex skill which can be analysed into simpler component skills. Skill is defined as a set of teaching behaviours aiming at the attainment of specific objectives. The training focusses on the development of these component teaching skills in the student teachers. Twenty-one skills—skill of stimulus variation, skill of reinforcement, skill of probing questioning, skill of increasing pupil's participation, skill of illustrating with examples, skill of explaining, skill of achieving closure, skill of recognising attending behaviour, etc. have been identified by Passi (1976).

Teaching is a complex activity. The complexity is caused by the fact that the student teacher learns to teach and, at the same time, he is to ensure that his pupils learn. The teaching encounter has been scaled down and simplified through microteaching. It is scaled down in terms of time, class size and teaching skills. A student teacher teaches a small group of 5-10 pupils—real pupils or peers—for 5-10 minutes. He practises one skill at a time to master it. Single concept lessons are used for practising the skill. The student teacher is provided systematic feedback on his performance using specific tools meant for the purpose.

Training through microteaching involves several steps. The first step in microteaching refers to the preparation of microlesson plans for the skill which is to be acquired. Microlesson plans are single skill concept lessons where the components of the specific skill under practice are maximised. The lesson is then taught by the student teacher to a group of pupils (real or peers). It is observed by the college supervisor or peer or by both using systematic observation schedule. The microteacher is provided specific feedback about his teaching performance so that he can improve upon the use of a particular skill. In the light of feedback provided, the microteacher replans the lesson.

The replanned lesson is again taught by the microteacher to the same or a new group of pupils in a bid to improve performance on the use of that skill. The reteach is again observed and refeedback is provided to the microteacher. This constitutes one cycle of microteaching. The cycle is repeated till the desired level of competence in the use of a particular skill is achieved. By way of summarisation, microteaching cycle can be described as :

—Teach
—Feedback
—Replan
—Reteach
—Refeedback

A word of caution here. Microteaching is not a substitute for block teaching experience. It is rather complementary. It prepares the student teacher for block teaching.

Microteaching has a number of advantages over the traditional student teacher training. As there are few students in the microteaching setting, it does not create any discipline problem in the class The trainee can concentrate better on the practice of the given teaching skill. In the microteaching session, the student teacher tries to maximise the practice of a given skill. This helps the microteacher to practise in detail the components of a given skill so as to acquire mastery over the skill. It helps the supervisor to observe the given skill in an objective manner which, in turn, helps the supervisor to give specific pinpointed feedback. Student teacher can, thus, easily modify his teaching behaviour in the light of the pinpointed feedback. Further, the student teacher is required to replan and reteach in the light of the feedback provided. Thus, the possibilities of improvement in his teaching are greater than otherwise.

The microteaching technique provides a safe practice ground. Safety is for the student teachers as well as for the pupils. The problems of discipline and tension are less for the student teacher. Pupils also do not suffer like guineapigs under the novice teacher. Besides, many of the administrative problems in arranging practice lessons are reduced as microteaching can be implemented in teacher training colleges where student teachers act as pupils. By way of summarisation, microteaching is effective as well as economical for helping student teachers to master teaching skills and, thereby, gain confidence for initiation into block teaching practice.

1.2 Effectiveness Research

A number of studies conducted abroad have found microteaching to be more effective in changing classroom behaviour of teachers than the prevalent student teaching programmes. The study conducted by

Kallenbach and Gall (1969) revealed that microteaching was a superior training strategy since it achieved similar results in only one-fifth of the time required for traditional teacher training programme. Studies have also been conducted to find out the relationship between performance in microteaching and school experience (Aubertine 1964; Allen and Fortune 1966; Kallenbach and Gall 1969; and Brown 1973). These studies point to strong relationship between microteaching and school experience. The studies indicate that microteaching performance appears to be the best predictor of the performance in the classroom.

Studies in India

Studies in microteaching conducted in India indicate its effectiveness and feasibility towards the modification of teacher behaviour. Chaudasama (1971) found that as a result of training through microteaching, the student teachers developed skill in questioning and ensured better pupil participation. Marker (1973) support the earlier fiindings regarding microteaching effectiveness. Singh (1974) found that student teachers trained through microteaching changed their verbal teaching behaviour in the classroom more significantly as compared to student teachers trained in the traditional way and Interaction Analysis. Passi and Shah (1974) found that microteaching was more effective in developing the skills of questioning, reinforcement, silence and nonverbal cues, and illustrating with examples. Bhattacharya (1974) tried microteaching with polytechnic teachers and found it more effective than conventional technique in the development of indirect teacher behaviour. Abraham (1974) found that microteaching was more effective in developing the skills of probing questioning and fluency in questioning. The Department of Teacher Education, National Council of Educational Research and Training, in a project involving nine colleges of education found microteaching approach more effective than the conventional approach (Das *et al.*, 1976), Joshi (1977), Lalita (1977), and Passi (1977) support the earlier findings.

1.3 Effectiveness of Component Variations

Studies conducted in India and abroad reveal that microteaching is more effective than traditional teacher training approach in the development of general teaching competence in student teachers. As a step forward, it was considered desirable to determine whether the effectiveness of this approach can be increased further by introducing variations in different components. Or, is it possible to have the microteaching approach equally effective while simplifying this training strategy ?

The National Council of Educational Research and Training organised Second National Seminar on Planning Research in Microteaching in 1976. This seminar was attended by teacher educators belonging to 40 colleges of education, university departments of education. Research and studies to determine the comparative effectiveness of various components of microteaching were designed in this seminar and studies were then conducted in 22 secondary colleges of education.

The sample of the studies consisted of 444 student teachers. Of these, 424 were B.Ed. students and the rest were doing undergraduate teacher education courses. Fifty-four per cent of the subjects were male and the remaining were female. Ninety-one per cent student teachers belonged to 18 to 30 years age group and the rest were above 30 years of age. A common research procedure was followed by the participating institutions while conducting the experimental studies. The classroom observations were made using General Teaching Competence Scale. These studies were conducted to determine the comparative effectiveness of different variations of each of the following components of microteaching.

i) Modelling (Perceptual vs Symbolic/Audio)
ii) Feedback (Peer vs Supervisor/Audiotape)
iii) Conditions (Simulated vs Real Classroom)
iv) Change in Teaching Units

Component-wise findings of the national project and other similar studies conducted in these areas are reviewed in this section.

Modelling

Studies have been conducted to find out the relative effectiveness of perceptual, symbolic and audio modelling in the development of general teaching competence in student teachers. Vaze (1974), found that audio modelling was a better technique than symbolic modelling in developing skills in questioning. Barad and Paikaray (1976), in their studies, found perceptual and symbolic modelling equally effective in developing general teaching competence among student teachers (Das, *et al.*, 1976).

Studies conducted at D.A.V. College of Education, Abohar; C. C. College of Education, H.J. College of Education, Bombay; and A.N.D. College, Kanpur, also reported that both formats of modelling were equally effective in developing general teaching competence in student teachers (Das, *et al.*, 1977). Studies conducted in a College of Education at Simla, found that perceptual and audio modelling were equally effective.

The results of the studies appear to be unexpected in the light of the literature in the area of modelling procedures for behaviour modification. In order to be sure of the results, it is considered desirable to replicate these studies and conduct more studies with other variations of the components.

Feedback

The provision of feedback is one of the main components of microteaching procedure. Studies have been conducted to compare the effectiveness of variations in feedback in developing general teaching competence in student teachers.

Sharma (1976), in his doctoral study, found audiotape-cum-supervisor feedback more effective than peer feedback in the development of general teaching competence of the student teachers. Paintal, Sharma, Seth and Joshi conducted studies in 1976 in their respective institutions in order to determine the relative effectiveness of feedback provided by college supervisor and feedback given by peers. They reported no significant differences in the relative effectiveness of these two sources of feedback in developing general teaching competence in student teachers (Das *et al.*, 1976). Studies conducted by the Department of Education, University of Indore; Vidya Bhawan Teacher's College, Udaipur; College of Education, Patna; Maharaja's College of Education, Vijayanagaram; R.M.V. Teacher's College, Coimbatore; Government Training College, Vellore; also arrived at similar results (Das *et al.*, 1977).

A comparison between the relative effectiveness of peer feedback and self feedback through audiotape was attempted at the Government College of Education, Ratnagiri. The study revealed no significant difference in these two sources of feedback in developing general teaching competence in the student teachers (Das *et al.*, 1977).

The results of the above studies reveal that three sources of feedback, namely, peer, college supervisor and self feedback using audiotape are equally effective in developing general teaching competence in the student teachers. Since these sources of feedback are equally effective, there is a need to undertake studies having different combinations of these sources of feedback with a view to determining whether any of the combination of these sources of feedback is more effective than the single source of feedback.

Conditions

Studies were conducted during 1976-77 to determine the comparative effectiveness of microteaching procedure under simulated and real classroom conditions at Central Pedagogical Institute, Allahabad; M.E.S. Teacher's College Bangalore; Regional College of Education, Bhubaneswar; R.V. Teacher's College, Bangalore, and Shri R.P. Ananda College of Education, Borsad. Out of the five, in three studies the student teachers trained under real classroom situation scored significantly higher on G.T.C. as compared to those who were trained in simulated conditions. The remaining two studies reported that both the conditions were equally effective in developing general teaching competence in the student teachers (Das, *et al.*, 1977).

A study was conducted at the T.D. College, Jaunpur, to determine the relative effectiveness of microteaching procedure under simulated conditions and under mixed conditions. The study reported no significant difference in the relative effectiveness of these two conditions in developing general teaching competence in the student teachers.

The results of the studies reviewed being inconclusive, it is considered desirable to replicate the studies.

Change in Teaching Units

An investigation into the effect of change in the teaching unit in 'reteach' session of the microteaching procedure upon the general teaching competence has been a matter of concern for the practitioners in microteaching. A.C. College of Education, Pune, conducted a study which revealed no significant difference in the general teaching competence of student teachers due to change in the teaching unit in the 'reteach' session.

Need for the Study

A review of the studies in the preceding section indicates that different levels of components of microteaching are equally effective in the development of general teaching competence in student teachers. These results are likely to have significant implications for designing and organising innovations in teacher education programmes. It is desirable to replicate studies as their findings are likely to have wider application. The present project envisages replication of these studies as well as to try out selected new variations of the components.

The Third National Seminar was organised by NCERT at Indore in 1977 with a view to designing studies which can be conducted with more precision and control to determine the comparative effectiveness of variations in different components of microteaching. Twenty-two colleges of education completed the studies. Besides, the main study on the relative effectiveness of variations in the components of microteaching, some other aspects of microteaching such as teaching experience of student teachers, effectiveness of microteaching with student teachers offering method of teaching Hindi, development of micro-lesson plans, study of the transfer of practice of skills to classroom and conventional situations, were also undertaken. The studies are reported in Section III of the report.

1.4 Statement of the Problem

The problem may be stated as : A STUDY OF THE RELATIVE EFFECTIVENESS OF VARIATIONS IN THE COMPONENTS OF MICROTEACHING TECHNIQUE IN THE DEVELOPMENT OF GENERAL TEACHING COMPETENCE IN STUDENT TEACHERS IN SECONDARY TEACHER EDUCATION INSTITUTIONS

1.5 Objectives

The study purported to realise the following objectives :

1. To study the relative effectiveness of different sources of feedback in the development of general teaching competence of student teachers and also the difference in their attitude towards teaching and anxiety level due to variation in the source of feedback.
2. To study the comparative effectiveness of perceptual and symbolic modelling in the development of general teaching competence of student teachers and the difference in their attitude towards teaching due to variation in modelling procedure.

3. To study the relative effectiveness of microteaching under simulated and in real classroom conditions in the development of general teaching competence in student teachers and the difference in their level of anxiety due to variation in conditions.

4. To compare the general teaching competence of student teachers trained through microteaching with the same or different teaching unit in the reteach session and also the difference in their attitude towards teaching as a result of variation in the teaching unit.

5. To compare the effect of class size upon the general teaching competence of student teachers and the change in their level of anxiety as a result of variation in the class size.

6. To determine the minimum number of teaching cycles required for attaining the desired level of proficiency in the teaching skills.

1.6 Hypotheses

The following null hypotheses were formulated for testing in the present study :—

Ho_1 There is no significant difference between the GTC scores of student teachers who receive feedback from peers and those who receive self feedback through audiotape.

Ho_2 There is no significant difference between the GTC scores of student teachers who receive feedback from peers and those who receive feedback from college supervisor.

Ho_3 There is no significant difference between the GTC scores of student teachers who receive feedback from peers and those who receive feedback from college supervisor.

Ho_4 There is no significant difference between the GTC scores of student teachers who receive feedback from peers and college supervisor, and those who receive feedback from peers and audiotape.

Ho_5 There is no significant difference between the retention level of general teaching competence of student teachers who receive different types of feedback.

Ho_6 There is no significant difference in the teaching attitude scores of the student teachers who receive different types of feedback i.e. peer feedback vs college supervisor feedback; and peer feedback vs peer and college supervisor feedback.

Ho_7 There is no significant difference in the anxiety scores of student teachers who receive feedback from peers and college supervisor, and those who receive feedback from peers and audiotape.

Ho_8 There is no significant difference between the GTC scores of the student teachers exposed to symbolic or perceptual modelling.

Ho_9 There is no significant difference between the retention level of general teaching competence of student teachers who are exposed to symbolic or perceptual modelling.

Ho_{10} There is no significant difference between the teaching attitude scores of the student teachers who are exposed to symbolic or perceptual modelling.

Ho_{11} There is no significant difference between the GTC scores of the student teachers who receive training under simulated or real classroom conditions.

Ho_{12} There is no significant difference between the anxiety scores of the student teachers who receive training under simulated or real classroom conditions.

Ho_{13} There is no significant difference between the GTC scores of the student teachers who are taught the same or different teaching unit in the reteach session.

Ho_{14} There is no significant difference between the teachers attitude scores of the student teachers who are taught the same or different teaching unit in the reteach session.

Ho_{15} There is no significant difference between the GTC scores of student teachers teaching a class size of 10 and 15 pupils respectively.

2.0 METHOD AND PROCEDURE

2.1 Design

The present field experiment involved 16 colleges of education. Parallel group design was followed by all the participating institutions. The teacher educators having experience of research in microteaching administered the experimental treatments. The studies were planned and designed in a national seminar organised at Indore in 1977. The procedure and treatments were kept uniform for the control group which was termed as the Standard Microteaching Technique (SMT) group. Planned variations in the components of microteaching were made in the experimental group which was termed as Modified Microteaching Technique (MMT) group. The tools, the criterion measures, the control variables and treatment time were kept constant for the SMT and MMT groups in all the institutions.

2.2 Sample

The sample of the study consisted of 330 student teachers (both male and female) drawn from 16 Colleges of Education. The study was conducted in willing institutions having expertise and facilities for microteaching. The participating institutions, and the research workers have been given in Table 2.1.

TABLE 2.1

Participant Institutions, Student-Teachers and the Number of Researchers Involved in Study

Sub Study Area

Code No.	*Name of Institution*	*No. of Student Teacher*		*No. of Researchers*
		Control	*Expl.*	
01	Faculty of Education, Banaras Hindu University, Varanasi (U.P.)	10	10	1

1	2	3		4
02	Faculty of Education, Banaras Hindu University, Varanasi (U.P.)	10	10	
03	Central Pedagogical Instt., Allahabad (U.P.)	10	10	1
04	Sri Rama Krishna Mission Vidyalaya, Teacher's College, Coimbatore (T.N.)	15	15	2
05	Department of Education, University of Indore, Indore (M.P.)	10	10	1
06	Saraswati College of Education Charkhi Dadri (Haryana)	10	10	2
07	Shri R.P. Ananda College of Education, Borsad (Gujarat)	10	10	1
08	C.R. College of Education, Rohtak	10	10	2
09	Department of Education, Dharwar University, Karnataka	10	10	1
10	S.N.D.T. College for Women, Karve Road, Pune-411004	10	10	2
11	Sree Siddaganga College of Education, Tumkur—2 (Karnataka)	10	10	1
12	Adarsh Comprehensive College of Education and Research, Pune-4	10	10	1
13	H.J. College of Education, Bombay	8	8	1
14	Chembur Comprehensive College of Education, Bombay	10	10	1
15	Regional College of Education, Bhopal	12	13	2
16	Dayanand College of Education, Solapur (M.S.)	10	10	1

The sample consisted of 330 student teachers. Of these, 49 per cent were male and the rest females. 93 per cent of the subjects belonged to 18 to 22 years age group and the rest were above the age of 29 years. Of these, 61 per cent were graduates and 39 per cent post graduates.

2.3 Tools Used

The tools used for different purposes in the study have been outlined in this section.

(a) *Ahluwalia's Teacher Attitude Inventory*

The attitude inventory, developed by Ahluwalia (1974) consists of 90 items distributed over 6 subscales constructed on the lines of Likert's summated rating procedure. Each scale has 15 statements related to a particular aspect of professional attitudes of teachers. The six areas covered by the sub-scales are: (i) Teaching Profession; (ii) Classroom Teaching; (iii) Child Centred Practices; (iv) Educational Process; (v) Pupils, and (vi) Teachers. The responses are to be given on a five point scale. The split half reliability is found to be 0.79 (N=239). The test-retest reliability after intervals of 3 months and 9 months are found to be 0.59 (N=102) and 0.64 (N=290). The inventory has a satisfactory content validity.

(b) *Anxiety Inventory*

State-Trait Anxiety Inventory (Spielberger *et al.* was used for measuring the level of anxiety of student teachers. The inventory consists of two parts The first part measures State Anxiety and the second part measures A-Trait or Trait Anxiety. Each part contains 20 items and each item is scored on a four point scale, '1' indicating low anxiety and the '4' indicating high anxiety. Some of the items are scored in the reverse direction. The maximum score for each part is 80.

(c) *Baroda General Teaching Competence Scale (BGTCS)*

This tool was used to get the criterion measure in general teaching competence of the subjects. It is an observation scale to measure general teaching competence through rating procedure. It was developed at the Centre of Advance Study in Education, Baroda (CASE). It has 21 items relating to planning, presentation, evaluation and classroom management to be rated on a seven point scale.

(d) *Evaluation Proformas for Teaching Skills*

For observing the five teaching skills, namely, skills of probing questioning, stimulus variation, explaining, reinforcement and illustrating with examples, evaluation proformas for coding the occurence of component behaviours of the skills were used. Along with frequency coding, rating (frequency) scales for each of the skills were also used.

Both types of tools are given in Passi (1976). The frequency proformas were used during the micro-lessons, whereas, the rating forms were used at the end of the lessons. Feedback was based on the coded data on these proformas.

2.4 Experimental Treatment

A common experimental procedure was followed by all the participating institutions while conducting their respective studies. After the sample for each study was selected, the student teachers were randomly assigned to two groups. One of the groups was trained through Standard Microteaching Technique (SMT), and the other through Modified Microteaching Technique (MMT). The details of these treatments are given in this section.

Standard Microteaching (Control)

The Standard Microteaching (SMT) followed in the control group involved nine steps outlined below.

Step-1 *Discussion of the Concept of Microteaching*

The concept of microteaching was explained to the student teachers in detail. It was followed by discussion.

Step-2 *Discussion of Teaching Skills*

The concept of teaching skills was clarified first. The five teaching skills, Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples, were explained at length with the help of the Handbook *Becoming Better Teacher* (Passi, 1976). One skill at a time was discussed before practice. The student teachers were also trained in observation.

Step-3 *Presentation of the Model*

The discussion of the skill was followed by model lessons given by the investigators in the method subjects which were chosen by the student teachers.

Step-4 *Preparation of Micro-lesson Plans*

Standard lesson format as given in the Handbook (Passi, 1976) was used. A specific concept was selected for each micro-lesson.

Step-5 *Microteaching Setting*

The following was the microteaching setting under the standard procedure.

a. Time :

Teach	6 mts
Feedback	6 mts
Re-plan	12 mts
Re-teach	6 mts
Re-feedback	6 mts
Total	36 mts.

b. Number of pupils	10
c. Supervisors	1

d. i. Source of feed-back peers
   ii. Peer and College Supervisor.

The experimental treatments were provided under simulated conditions.

Step-6 *Sequence of Skills*

Practice of the five skills by the student teachers followed the sequence given below.

i. Probing Questioning
ii. Stimulus Variation
iii. Reinforcement
iv. Explaining
v. Illustrating with Examples.

Step-7 *Observation of Teaching Skills*

The teaching skills being developed through microlessons were observed by the peer supervisors using frequency count as well as rating except [illegible] one study where the peer and college-supervisor feedback was provided. The ratings were given after the lesson on a rating schedule.

Step-8 *Feedback*

Immediate feedback was given to the student teachers individually. The feedback was based on the tallies and the ratings on the observation schedules and the interpretation in the light of model lessons.

Step-9 *Teaching Time*

Two complete cycles of microteaching for each of the five skills were given by the student teachers. Teaching time for both SMT and MMT groups was the same.

MMT (Experimental)

The treatment of MMT was exactly the same as that for SMT except for the planned variation in one of the components of microteaching technique. These variations are indicated below.

1. Modelling : Perceptual vs Symbolic
2. Feedback : (a) Peer feedback vs self feedback through audiotape
   (b) Peer feedback vs feedback by college supervisor
   (c) Peer feedback vs feedback from peer and college supervisor
   (d) Feedback from peer and college supervisor vs feedback from peer and audiotape
3. Condition : Peers vs real pupils
4. Teaching Unit : Same vs different teaching unit in reteach session
5. Class Size : Class with 11 students vs class with 15 students
6. Teaching Cycle : Half to three cycles.

2.5 Experimental Treatment Allocation

The participant institutions tried one of the planned variations in the microteaching components which formed the MMT treatment for that institution. The various MMT treatments and the corresponding institutions are shown in Table 2.2.

TABLE 2.2

Institutions and their Respective MMT Experimental Treatments

Sl. No.	*MMT Treatment*			*Institution Code*	*No. of Institutions*
1.	Modelling—Symbolic			07 & 08	2
2.	Feedback—	(i)	College supervisor	02, 03 & 06	3
		(ii)	Feedback by Tape Recorder	01	1
		(iii)	Feedback from peers and college supervisor	04	1
		(iv)	Feedback from Peers and Audiotape	05	1

1	2	3	4
3.	Condition — Real	10, 11 & 12	3
4.	Change in Teaching Units — Different in the reteach session	13 & 14	2
5.	Class size — larger class size	15	1
6.	Teaching — One half to three cycles	16	1
	Total		15

2.6 Sequence of Events

The section outlines the administration of the treatments to the experimental and control groups. The sequence followed in the administration of the treatments has also been given.

Administration of ATAI and STAI

Ahluwalia's Teacher Attitude Inventory (ATAI) and State-Trait Anxiety Inventory (STAI) were administered to the student teachers in the SMT and MMT Groups.

Pre-Training Observation

The student teachers in the two groups gave two lessons of full length period in actual classroom setting. Their teaching was observed and performance was rated on Baroda General Teaching Competence Scale (BGTCS). The rating was done by the investigators with or without the help of another college supervisor. The mean performance on the two lessons formed the pretest scores.

Experimental Treatment

The student teachers were then administered respective treatments as discussed earlier. Each student teacher of the SMT and MMT groups completed two cycles on each skill. Five skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples, were chosen for the microlessons. Thus, in all, ten microteaching cycles were completed by each student teacher.

Post-Training Observation

After ten microteaching cycles, two lessons of regular teaching in respect of student teachers in both the groups were again observed and rated on BGTCS by the same supervisor (s). The mean performance on these two lessons formed the post-test scores.

The regular practice teaching continued for both the groups under real school conditions. After they had taught five macro-lessons, two full lessons were again observed on the BGTCS by the same supervisor(s). At this stage Ahluwalia's Teacher Attitude Inventory and the State Anxiety Inventory were administered. The mean performance on two lessons on BGTCS which are termed as 'retention' scores formed the post-test II measures.

The complete design of the experiment can be schematically represented as in Table 2.3

TABLE 2.3
The Schematic Sequence of Events

Sl. No.	*Subjects*	*Control Group (SMT)*	*Experiment Group (MMT)*
1.	Pre-test measure on two macro-lessons	BGTCS ATAI Anxiety Inventory	BGTCS ATAI Anxiety Inventory
2.	Treatments Ten Microcycles, two for each of the five skills i. Probing questioning ii. Stimulus variation iii. Reinforcement iv. Explaining v. Illustrating with Examples	SMT Treatment	One of the following MMT Treatments i. Modelling-Symbolic ii. Feedback a. College—Supervisors b. Tape-recorder c. Peers and College Supervisor d. Peers and Audio-tape iii. Condition—Real iv. Change in Teaching unit in Reteach session Different teaching unit. v. Class size—Larger class size vi. Teaching—One half of 3 cycles.
3.	Post-test measure on two macrolessons	BGTCS	BGTCS

1	2	3	4
4.	Practice Teaching	5 lessons under normal school conditions	5 lesson under normal school conditions
5.	Post-test II measure on two macrolessons	BGTCS ATAI Anxiety Inventory	BGTCS ATAI Anxiety Inventory

SMT (Control group) N=162 and (SMT) experimental group N=168.

The duration of the experiment was 13 weeks. The detailed time scheduling has been shown in Table 2.4.

TABLE 2.4

Time Schedule

	Activity	*Approximate Duration*
1.	Administration of tools at pre-test stage	1 week
2.	Observation of two regular lessons (Pretest)	1 week
3.	Orientation in microteaching	1 week
4.	Explaining and demonstrating five teaching skills	2 weeks
5.	Practising the 5 skills in 10 microcycles	4 weeks
6.	Observation of two regular lessons (Post-test I)	1 week
7.	Practice teaching (5 regular lessons in normal classroom conditions).	2 weeks
8.	Observation of two regular lessons (Post-test-II) and administration of Attitude Inventory and Anxiety Inventory.	1 week
	Total	13 weeks

2.7 Analysis of Data (Institution-wise)

The data of sub-studies were analysed by the respective investigators. The following scores were computed :—

G_1 = Gain scores between Post-test I and Pre-test indicating the difference in the GTC scores due to the treatment variable.

G_2 = Gain score between Post-test II and Post-test I indicating *retention level* of the GTC scores.

G_3 = Gain score between Post-test II and Pre-test I showing *cumulative effect* of microteaching treatment and the usual practice teaching following the treatment in terms of the GTC scores.

The data were subjected to parametric as well as nonparametric analysis. 't' test and Mann-Whitney's test were applied to test the significance of differences in the GTC scores due to different treatment variables, and attitude and anxiety mean gain scores for SMT and MMT groups of each institution.

S.C.E.R.T., West Beng...
Date 12/12/84
Acc. No. 3051

S.C.E.R.T., West Bengal
Library
Calcutta

3.0 THE RESULTS

Need, objectives, hypotheses and methodology have been outlined in the preceding sections of the report. This section presents data, discussion on the results, and main conclusions. The sequence of discussions on results is in accordance with the objectives and hypotheses of the study. The hypotheses have been tested for significance at .05 and .01 levels of confidence. Significance of difference between the two means has been tested by 't' test. Mann Whitney's test was applied as non-parametric measure. Both of these techniques yielded same results.

3.1 Sources of Feedback

The first objective of the present study refers to the relative effectiveness of different sources of feedback in the development of general teaching competence of student teachers and also the difference in their attitude towards teaching and anxiety level. In order to realise these objectives, the following hypotheses have been tested.

Ho_1 There is no significant difference between GTC scores of student teachers who receive feedback from peers and those who receive self feedback through audiotape.

Ho_2 There is no significant difference between GTC scores of student teachers who receive feedback from peers and those who receive feedback from college supervisor.

Ho_3 There is no significant difference between GTC scores of student teachers who receive feedback from peers and those who receive feedback from peers and college supervisor.

Ho_4 There is no significant difference between GTC scores of student teachers who receive feedback from peers and college supervisor and those who receive feedback from peers and audiotape.

Ho_5 There is no significant difference between the retention level of general teaching competence of student teachers who receive different types of feedback.

371
DAS

Ho_6 There is no significant difference between attitude towards teaching of student teachers who receive different types of feedback, i.e. peer feedback vs feedback from college supervisor; and peer feedback vs feedback from peers and college supervisor.

Ho_7 There is no significant difference in the anxiety scores of student teachers who receive feedback from peers and college supervisor, and those who receive feedback from peers and audiotape.

The results regarding the significance of difference between the effectiveness of different sources of feedback are given in Table 3.1.

TABLE 3.1

Significance of Difference between Mean GTC Scores of SMT and MMT Groups Due to Variation in the Source of Feedback

Institution Code	Sources of Feedback			Gain Scores (G_1)**				Gain Scores (G_2)***				Gain Scores (G_3)****			
	SMT	MMT		SMT	MMT	df	t value	SMT	MMT	df	t value	SMT	MMT	df	t value
01	Peer Feedback	Self Feedback by Tape-recorder	M	19.2	5.44	17		7.5	2.67	17		26.6	9.89	17	2.16*
			SD	17.07	9.65		2.14*	10.49	17.18			15.81	18.11		
			N	10	9			10	9			10	9		
02	Peer Feedback	College Supervisor Feedback	M	19.20	11.80	18	1.45	7.50	18.00	18	1.67	25.60	29.40	18	.66
			SD	17.09	8.60			10.45	16.84			15.55	19.59		
			N	10	10			10	10			10	7.90		
03	Peer Feedback	College Supervisor Feedback	M	3.30	4.20	18	0.60	1.20	1.20	18	.0	3.70	6.00	18	1.4
			SD	1.28	3.28			0.98	1.17			2.15	4.05		
			N	10	10			10	10			10	10		
04	Peer Feedback	Peer and College Supervisor Feedback	M	7.29	8.50	28	1.21	2.86	3.86	28	1.00	10.14	12.36	28	2.22*
			SD	2.70	3.96			2.32	3.01			4.28	5.29		
			N	15	15			15	15			15	15		
05	Peer and College and Supervisor Feedback	Self for Feedback using Tape-recorder	M	14.80	18.90	18	1.39	5.49	7.20	18	.55	19.60	26.10	18	1.47
			SD	5.92	6.53			6.55	4.41			7.69	6.67		
			N	10	10			10	10			10	10		
06	Peer Feedback	College Supervisor Feedback	M	25.70	37.00	18	2.65*	4.70	2.90	18	0.79	30.40	37.90	18	1.59
			SD	8.74	9.34			3.52	5.89			7.61	11.94		
			N	10	10			10	10			10	10		

* Significant at .05 level.

** Post-test I—Pretest

*** Post-test II—Post-test—I

**** Post-test II—Pretest.

It is evident from Table 3.1 that one institution investigated into the relative effectiveness of peer feedback vs self feedback using audio; three studies investigated into the effectiveness of peer vs college supervisor feedback; one study covered peer vs college supervisor and peer feedback; another study covered peer and college supervisor vs peer and self feedback using audiotape.

One institution (01) studied the relative effectiveness of peer feedback and self feedback by audiotape. Peer feedback was found to be significantly more effective than self feedback using audiotape in the development of general teaching competence among student teachers. The null hypothesis (Ho_1) therefore is rejected.

Three institutions (02, 03 and 06) studied the comparative effectiveness of peer feedback and college supervisor feedback. Of these three studies, two studies (02 and 03) revealed no significant differences in the relative effectiveness of these two sources of feedback. The third study (06), however, showed that the feedback provided by the college supervisor was more effective than peer feedback. In the light of these results, it is not possible either to reject or sustain the hypothesis (Ho_2). A pooled analysis of data of all the three studies is needed in order to ascertain the comparative effectiveness of these two sources of feedback.

One institution (04) attempted to find out the relative effectiveness of peer feedback and combined feedback from peer and college supervisor. The study revealed that both these sources are equally effective in developing general teaching competence among student teachers. The null hypothesis (H_3), therefore, cannot be rejected.

Another institution (05) attempted to investigate the comparative effectiveness of combined feedback from peer and college supervisor and with that of combined feedback from peers and audiotape. This study also revealed that these sources of feedback are equally effective in developing general teaching competence among student teachers. Thus, the null hypothesis (H_4) cannot be rejected.

The overall results of the above studies indicate that peer feedback is more effective than self feedback using audiotape. This may be due to the reason that self feedback from audiotape can be effective only when the microteacher knows fully what behaviours are expected of him and he accepts these behaviours as desirable. It can, therefore, be said that self feedback through audiotape is less effective than peer feedback. Morrison and McIntyre (1973) suggests that "the value of audiotape feedback depends on how well the student teachers have been prepared for practising a skill." The results of a study by Morse *et al.* (1970) suggest that students profit from listening to their tapes with a guide and having a personal supervisory conference.

The results of the above studies, by and large, suggest that feedback provided by peer supervisor is as good as the one provided by the college supervisor. The results are in agreement with the conclusions arrived at by Singh (in press) in review of studies on feedback. These results have wider implications and merit further differentiated investigations. There could be many reasons for the said results. One reason could be that peers could achieve similar competence in providing feedback to that of college supervisor. Another reason could be that supervisors also were not adequately prepared in the use of BGTCS for feedback. Similar results were, however, obtained by Belt (1967) who used classmates to assist supervisors in the evaluation of microlessons taught by a member of the class. He reported that trainees agreed that comments and suggestions made by fellow students were definitely valuable. The results of the above studies are similar to those obtained in all the six studies conducted earlier under the NCERT field experiment (Das, *et al.*, 1977).

3.2 Retention of General Teaching Competence

Table 3.1 shows that there is no significant difference in the retention level of general teaching competence of student teachers who received different types of feedback. Thus the hypothesis (H_5) cannot be rejected. It is further revealed that there is no change in the cumulative effect on the GTC scores due to the variation in the sources of feedback.

3.3 Student Teachers' Attitude and Feedback

An attempt was made to determine whether the difference in the type of feedback in microteaching procedure brings about a significant difference in student teachers' attitude towards teaching. Four institutions (02,03, 04 and 06) conducted studies in this respect. The results of these studies are given in Table 3.2

TABLE 3.2

Difference between Means of Attitude Towards Teaching Scores of SMT and MMT Groups Receiving Different Types of Feedback

Institution Code	*Type of Feedback*	*Gain Scores*						*df*	*t value*	*Level of Significance*
		SMT Group			*MMT Group*					
		M	SD	N	M	SD	N			
02	Peer Feedback vs. College Supervisor Feedback	19.40	19.56	10	25.80	12.30	10	18	0.87	NS
03	Peer Feedback vs. College Supervisor Feedback	4.90	1.47	10	7.80	5.47	10	18	1.53	NS
04	Peer Feedback vs. Peer and College Supervisor Feedback	44.50	26.33	15	27.57	24.84	15	28	1.75	NS
06	Peer Feedback vs. College Supervisor Feedback	7.70	8.60	10	9.50	10.38	10	18	0.40	NS

The Table 3.2 indicates that there is no significant difference between attitude towards teaching scores of student teachers who received different types of feedback, i.e. Peer Feedback vs. College Supervisor Feedback; and Peer Feedback vs. Peer and College Supervisor Feedback. The null hypothesis (H_6), therefore, cannot be rejected. The sources of feedback used in these studies is not more effective than others in developing a favourable attitude towards teaching among the student teachers. These results are similar to those obtained in all the six studies conducted under the NCERT field experiment (Das, *et al*, 1977).

3.4 Student Teachers' Anxiety Level and Feedback

Only one institution (05) attempted to find out whether variation in the source of feeback, i.e. peer feedback and college supervisor feedback (SMT) vs. peer and audiotape feedback (MMT) causes a significant difference in the level of anxiety of student teachers. The results of this study are given in Table 3.3. The significance of difference between means of gain scores on anxiety for SMT and MMT groups was tested by the use of 't' test.

TABLE 3.3

Significance of Difference between the Means of Gain Scores on Anxiety for SMT and MMT Groups

Institution Code		*Gain Scores* *SMT*			*MMT*			*df*	*t value*	*Level of Significance*
		M	SD	N	M	SD	N			
05	S	11.60	8.39	10	9.90	4.37	10	18	.52	NS
	T	8.30	7.31	10	9.60	7.65	10	18	.36	NS

S stands for State-Anxiety
T stands for Trait-Anxiety

Table 3.3 reveals that there is no significance in the level of anxiety of student teachers due to difference in the source of feedback. Thus, null hypothesis (H_7), cannot be rejected. The sources of feedback do not appear to affect the anxiety level of student teachers.

3.5 Perceptual and Symbolic Modelling

The second objective of this study is to find out the comparative effectiveness of perceptual and symbolic modelling in the development of general teaching competence among student teachers and also the difference in their attitude towards teachers due to variation in the modelling procedure. In the light of this objective, the following three hypotheses were formulated for testing.

Ho_8 There is no significant difference between the GTC scores of student teachers exposed to either symbolic or perceptual modelling.

Ho_9 There is no significant difference between the retention level of general teaching competence of student teachers exposed either to symbolic or perceptual modelling.

Ho_{10} There is no significant difference between the attitude towards teaching scores of student teachers who were exposed either to symbolic or perceptual modelling.

Table 3.4 gives results regarding the comparative effectiveness of perceptual and symbolic modelling.

TABLE 3.4

Difference between Mean Gain Scores on GTC of SMT (Perceptual Modelling) and MMT (Symbolic Modelling) Groups

Institution Code		Gain Scores (G_1) Post-test-I -Pre-test				Gain Scores (G_2) Post-test-II -Post-test-I				Gain Scores (G_3) Post-test-II -Pre-test			
		SMT	MMT	df	t value	SMT	MMT	df	t value	SMT	MMT	df	t value
07	M	22.0	15.2	18	1.48	5.8	7.8	18	0.37	27.8	22.7	18	1·13
	SD	10.04	10.81			5.97	7.01			13.10	8.04		
	N	10	10			10	10			10	10		
08	M	35.6	26.6			9.4	7.0			45.0	33.6		
	SD	5.37	7.07	18	3.04**	6.76	3.55	18	0.945	4.82	7.58	18	3.81**
	N	10	10			10	10			10	10		

** Significant at .01 level

It will be seen from Table 3.4 that two institutions (07 and 08) studied the comparative effectiveness of perceptual modelling and symbolic modelling in the development of general teaching competence among student teachers. The study conducted by the institution (07) reveals that there is no significant difference in the relative effectiveness of the two forms of modelling procedure. On the contrary, the study conducted by institution (08) indicates that the perceptual modelling is significantly more effective than the symbolic modelling in the development of general teaching competence among student teachers.

In such a situation, an analysis of the pooled data of both studies is necessary for ascertaining the comparative effectiveness of these two formats of modelling procedure. In the absence of such an analysis, it is not possible either to sustain or reject the null hypothesis (Ho_8). Two studies conducted under the NCERT field experiment (1976-77), however, revealed no significant difference in the comparative effectiveness of these two formats of modelling procedure in the development of general teaching competence among student teachers (Das, *et al.*, 1977). Vaze (1975), in his doctoral study, found that the audio-modelling was a better technique than symbolic modelling in developing the skill of probing questioning. More studies are needed in this area before any firm conclusions could be drawn regarding relative effectiveness of perceptual and symbolic modelling in the development of general teaching competence among student teachers.

3.6 Retention of General Teaching Competence

The retention level of GTC scores between SMT (Perceptual) and MMT (Symbolic) groups was studied by the institutions (07 and 08). Table 3.4 indicates the results in this regard. These studies reveal that there is no significant difference in the retention level of GTC scores of SMT and MMT groups. The null hypothesis (Ho_9) cannot be rejected.

Table 3.4 also reveals that there is no significant difference in the cumulative effect on the GTC scores due to variation in the modelling procedure. These results are similar to those obtained in studies conducted under the NCERT field experiment (Das, *et al.*, 1980)

3.7 Student Teachers' Attitude and Modelling

Two institutions (07) and (08) conducted studies to determine whether the difference in modelling procedure affects the attitude towards teaching of student teachers. The results of these studies are given in Table 3.5.

TABLE 3.5

Difference between Mean Attitude Towards Teaching Scores of SMT and MMT Groups

Institution Code	*Gain Scores*			
	SMT	*MMT*	*df*	*'t' value*
07	M 17.2	4.5	18	1.65
	SD 14.90	19.55		
	(N=10)	10		
08	M 9.5	4.0	18	3.30**
	SD 3.47	2.43		
	(N=10)			

It can be seen from Table 3.5 that there is no significant difference between the attitude towards teaching scores of student teachers who were exposed to perceptual modelling, and those who were exposed to symbolic modelling in the study conducted by (07). On the contrary, the study conducted by the institution (08) reveals that there is a significant difference between the attitude towards teaching of student teachers who were exposed to perceptual modelling and those who were exposed to symbolic modelling. This needs further study, since the findings of the study contradict each other.

3.8 Conditions (Simulated vs Real Classroom)

The third objective of the study was to determine the relative effectiveness of microteaching under simulated and under real classroom conditions in the development of general teaching competence among student teachers. To realise this objective, the following two hypotheses were formulated for testing.

Ho_{11} There is no significant difference between the GTC. scores of student teachers who received training either under simulated or real classroom conditions.

Ho_{12} There is no significant difference between the anxiety scores of the student teachers who receive training either under simulated or real classroom conditions.

The purpose of undertaking a study in this respect was that there exists an apprehension among a number of persons working in the field of microteaching that microteaching approach may be more effective under real classroom conditions than under simulated conditions, because in the latter case, the teaching situation is an artificial one. But from the administrative point of view, it is comparatively much easier to provide training to student teachers in the teacher training institution itself. Moreover, availability of real pupils is a real difficulty. Three institutions (10, 11 and 12) conducted studies to find out the relative effectiveness of microteaching approach under simulated conditions and that under real classroom conditions. The results of these three studies are given in Table 3.6.

TABLE 3.6

The Difference between the Mean of Gain Scores on GTC for SMT and MMT Groups (Simulated and Real Classroom Conditions)

Institution Code	*SMT Group*			*MMT Group*			*df*	*t value*	*Level of Significance*
	M	*SD*	*N*	*M*	*SD*	*N*			
10	24.45	19.20	9	30.92	19.70	10	17	0.6832	NS
11	28.20	16.11	10	27.30	15.42	10	18	0.123	NS
12	3.67	5.49	9	3.64	8.11	9	18	0.009	NS

It is evident from Table 3.6 that the microteaching approach is equally effective under both the conditions. The hypothesis (Ho_{11}), therefore, cannot be rejected. The results of these three studies are similar to those obtained in other two studies conducted under the NCERT field experiment (Das *et al.*, 1980).

3.9 Conditions and Anxiety Level of Student Teachers

Besides, finding out the effectiveness of microteaching under simulated conditions and under real classroom conditions, an attempt was made to determine as to whether this difference in condition causes any significant difference in the level of anxiety of student teachers. Only one institution (10) conducted a study in this respect. The results of this study are given in Table 3.7.

TABLE 3.7

The Difference between Mean Scores on Anxiety Level of SMT (Simulated Conditions) and MMT (Real Conditions) Groups

Institution Code	*SMT*			*MMT*			*df*	*t value*	*Level of Significance*
	M	*SD*	*N*	*M*	*SD*	*N*			
10	3.44	6.15	9	6.87	3.99	8	15	1.2865	NS

It is evident from Table 3.7 that there is no significant difference in the level of anxiety of student teachers trained through microteaching, either under simulated conditions or under real classroom conditions. Thus, the hypothesis (Ho_{12}) cannot be rejected.

3.10 Change in the Teaching Unit

The fourth objective of the study was to compare the general teaching competence of student teachers trained through microteaching with the same or different teaching unit in the 'reteach' session and also the difference between their attitude towards teaching as a result of variation in the teaching unit in 'reteach' session. In the light of this objective, the following two hypotheses were formulated for testing

Ho_{13} There is no significant difference between the GTC scores of student teachers who taught the same or different teaching unit in the reteach session.

Ho_{14} There is no significant difference between the attitude towards teaching scores of student teachers who taught the same or different teaching unit in the reteach session.

For realising the above objectives, two institutions (13 and 14) conducted an experiment to study the effect of change in the teaching unit during 'reteach' session of microteaching procedure upon the development of general teaching competence of student teachers. The results of these studies are given in Table 3.8.

TABLE 3.8

The Difference between Mean Gain Scores on GTC of SMT and MMT ('reteach' with different teaching unit) Groups

Institution Code	*SMT*			*MMT*			*df*	*t value*	*Level of Significance*
	M	*SD*	*N*	*M*	*SD*	*N*			
13	7.38	15.87	8	14.88	20.2	8	14	0.83	NS
14	12.00	5.58	10	13.2	5.16	10	18	0.5	NS

The Table 3.8 reaveals that there is no significant difference in the GTC scores of student teachers trained through microteaching with the same or different teaching unit in the 'reteach' session. Thus, the hypothesis (Ho_{13}) cannot be rejected. This indicates that when a different teaching unit is taught to the same students during 'reteach' session, it does not produce any significant gain in GTC, as compared to the gain in GTC scores when student teachers teach the same teaching unit in the 'reteach' session. The results of this study are similar to those obtained in the only study conducted under the NCERT field experiment (Das, *et al.*, 1980).

3.11 Variation in Teaching Unit and Student Teacher's Attitudes

Two institutions (13 and 14) attempted to find out the difference in attitude towards teaching scores of student teachers who taught the same teaching unit in the 'reteach' session and others who taught different teaching unit in the 'reteach' session. The results of this study are given in Table 3.9.

TABLE 3·9

The Difference between the Mean Attitude towards Teaching Scores of SMT and MMT ('reteach' with different teaching unit) Groups

Institution Code	*SMT*			*MMT*			*df*	*t value*	*Level of Significance*
	M	*SD*	*N*	*M*	*SD*	*N*			
13	6·88	16·01	8	13·88	19·87	8	14	0·78	NS
14	3.4	26·92	10	2.3	18·07	10	18	0·56	NS

Table 3.9 shows the significance of difference between the attitude towards teaching of student teachers trained with the same teaching unit and that with a different one in the 'reteach' session of the microteaching procedure. It is clear from the table that there is no significant difference between attitude towards teaching of student teachers trained through microteaching with the same or different teaching unit in the 'reteach' session. Thus, the null hypothesis (Ho_{14}) cannot be rejected. Similar results were obtained in a study conducted under the NCERT field experiment (1976-77) (Das, *et al.*, 1977).

3.12 Variation in Class Size

The fifth objective of the study was to compare the effect of class size upon the general teaching competence of student teachers and the change in their level of anxiety as a result of variation in the class size. In the light of this objective, the following hypothesis was formulated.

Ho_{15} There is no significant difference between the GTC scores of student teachers teaching a class size of 10 and 15 pupils respectively.

Only one institution (15) conducted study in this respect.

Due to experimental mortality the number of student teachers in the SMT group was reduced to 9 and in the MMT group to 13. The result are given in table 3·10.

TABLE 3.10

The Difference between Mean Gain Score on GTC (G_1 G_2 G_3) and the Level of Anxiety of SMT and MMT (large class size) Groups.

Gain Scores	*SMT* ($N_1=9$)		*MMT* ($N_2=13$)		*df*	*'t' Value*
	M	*SD*	*M*	*SD*		
Gain between Post test-I and Pretest	16·33	10·39	20·11	5·59	20	0·957 (NS)
Gain between Post-test II and Post-test I	0·78	4·94	—0·67	3·08	20	0·75 (NS)
Gain between Post-test II and Pre-test	17·11	8·51	19·44	4·90	20	0·71 (NS)
Gain between Post test II and Pre-test (State Anxiety)	—4·44	5·46	—2·33	7·26	20	0·55 (NS)
Trait Anxiety	0.	5·15	—8·77	11·20	20	2·134*

* Stands for significance at O.Os' level.

It is evident from table 3.10 that there is no significant difference between the GTC scores (G_1) of SMT and MMT groups. Besides, there is no significant difference between the retention level (G_2) of general teaching competence of these groups, i.e. SMT and MMT. There is also no significant difference in the state-anxiety level of student teachers of SMT and MMT groups. The difference in the Trait-Anxiety of SMT and MMT groups was, however, found to be significant. The size of the microclass can be increased from 9 to 13 students without reducing effectiveness of microteaching.

3.13 Microteaching Cycles and Mastery Level of Teaching Skills

The sixth objective of the study is to determine the minimum number of teaching cycles required for attaining the desired level of proficiency in teaching skills. Only one institution (16) conducted a study to realise this objective. The sample of the study consisted of 10 B.Ed. students. The desired level of proficiency in each skill was to obtain a '5-point' rating on the seven point scale of the observation schedule. Table 3.11 gives the number of microteaching cycles completed by the group of 10 students for attaining the target level of mastery over teaching skills. The number of teaching skills required to be mastered by the student teachers was five, i.e. Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples. S_1, S_2, S_3, S_4 and S_5 stand for these five skills.

TABLE 3.11

Number of Microteaching Cycles Completed by the Student Teachers

Student teachers	S_1	S_2	S_3	S_4	S_5	*Total*
1	2	2	1	2	2	9
2	2	2	1	2	2	9
3	2	2	2	2	2	10
4	2	1½	1	3	2	9½
5	2½	2	2	2	1	9½
6	2½	2	2	2	2	10½
7	2	2	2	2	2	10
8	2	2	2	2	2	10
9	1½	3	2	2	2	10½
10	2	3½	2	2	2	10½
						98½

It will be seen from the table that the range of the microteaching cycle varies from 1 to 3½ for acquiring the desirable mastery of the skill. Two microteaching cycles appear to be the predominant trend for acquiring the accepted mastery level.

3.14 Findings

The following main conclusions may be drawn from the findings of the study.

1. Peer feedback is significantly more effective than self feedback through audiotape in the development of general teaching competence among secondary student teachers.
2. The feedback provided by peers and college supervisor and the feedback from peers and audiotape are equally effective in the development of general teaching competence in secondary student teachers. Besides, peer feedback singly is equally as effective as compared to the feedback from peer and college supervisor.
3. There is no clear cut evidence regarding comparative effectiveness of peer feedback and college supervisor feedback in the development of general teaching competence in secondary student teachers. Further studies are needed.
4. There are no conclusive results with regard to the comparative effectiveness of Perceptual and Symbolic modelling in developing general teaching competence in secondary student teachers.
5. Microteaching under simulated conditions and under real classroom conditions is equally effective in developing general teaching competence in secondary student teachers.
6. The development of general teaching competence is not affected significantly if the same or different teaching unit is taught in the 'reteach' session of microteaching.
7. The development of general teaching competence is not affected adversely when the micro class size is increased from 9 to 13.
8. The practice in two microteaching cycles for each skill appears to be desirable for acquiring a reasonable level of mastery over teaching skills.
9. Attitude Towards Teaching, retention level of GTC, and the level of anxiety of secondary student teachers are not affected significantly by specific variation in the different components of microteaching, i.e. feedback, modelling condition, teaching unit tried out in the study.

Section II

ABSTRACTS OF SIXTEEN STUDIES

This Section of the report comprises abstracts of all the sixteen studies whose findings have been discussed in Chapter III of Section I. The abstracts provide objectives of the study, sample and its selection, experimental treatment (s), tools used, statistical techniques applied and the findings obtained. Individual abstracts of these studies have been included with a view to highlighting the findings of each study against the background of the individual participant institution. Specific tools used for data collection and sample characteristics in respect of each of the institutional study have been described in more detail than the composite study.

STUDY-1

Title

A Comparative Study of Effectiveness of Peer Feedback and Self Feedback using Tape Recorder on the General Teaching Competence of Student Teachers.

INVESTIGATOR

Dr. T.S. Rao,
Faculty of Education,
Banaras Hindu University,
Varanasi (U.P.)

Dr. Rao attempted to determine the relative effectiveness of peer feedback and self feedback through audiotape in developing general teaching competence in student teachers.

The study employed pretest postest control group design. The sample of the study consisted of 20 student teachers. These students were grouped into two equivalent groups matched in terms of age, qualifications and the level of anxiety. The control group consisted of 10 student teachers and the experimental group of 9 student teachers. One student teacher dropped out from the experimental group. The former group consisted of 7 male subjects and 3 female and the latter comprise 6 male subjects and 3 female. Most of the subjects in both the groups were post-graduate in Science or Mathematics. The age range of the subjects in both the groups was between 19-24 years. Here, 't' test and Mann Whitney's test were used to find out the significance of difference between the mean gain scores of experimental group and control group on GTC. The study concluded that peer feedback was significantly more effective than self feedback through audiotape.

STUDY-2

Title

Comparative Study of the Effect of Microteaching under Varying Sources of Feedback upon General Teaching Competence and Attitude of Teacher Trainees towards Teaching.

INVESTIGATOR

Dr. Tribhuwan Singh,
Faculty of Education,
Banaras Hindu University,
Varanasi (U.P).

Dr. Singh attempted to determine the relative effectiveness of supervisor feedback and that of peer feedback in developing general teaching competence in secondary student teachers. Besides, he studied the relative effectiveness of these two sources of feedback on the retention level of general teaching competence. The differential effect of supervisor feedback and that of peer feedback on student teacher attitude towards teaching was also studied.

The sample of the study consisted of 20 pre-service B.Ed. trainees. They were selected out of 220 trainees admitted in the Faculty of Education, Banaras Hindu University, Varanasi (U.P.) in the session 1977-78. Only student teachers having English as their medium of instruction and taking up Science and English as teaching subjects were selected. These 20 student teachers were grouped into two equivalent groups—control and experimental. These groups were formed on the basis of matching in terms of sex and the academic qualifications.

The study employed pretest-postest control group design. The control group was provided feedback by peers and the experimental group received feedback from the college supervisor. Student teacher attitude towards teaching was measured through Ahluwalia's Teacher Attitude Inventory and the General Teaching Competence through the Baroda General Teaching Competence Scale. Training in five skills—Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples, was provided. The following main conclusions were drawn from the study.

i. Peer's feedback and the feedback by college supervisor are equally effective in developing general teaching competence in secondary student teachers.

ii. There is no significant difference in the relative effectiveness of peer feedback and that of college supervisor feedback in the retention of general teaching competence in secondary student teachers.

iii. Student teachers attitude towards teaching is not affected significantly as a result of variation in feedback, i.e. from peers or college supervisor.

STUDY-3

Title

A Comparative Study of the Effect of Microteaching under Varying Source of Feedback and Attitudes of Student Teachers towards Teaching.

INVESTIGATOR

Shri. S.N. Rai,
Government Central Pedagogical Institute,
Allahabad (U.P.).

Rai studied the comparative effectiveness of supervisor feedback and peer feedback in developing general teaching competence in pre-service secondary school teachers. Besides, he studied the relative effectiveness of these two sources of feedback on the retention level of general teaching competence. Comparative study of the student teachers' attitude towards teaching was also studied under two conditions.

The sample of the study consisted of 20 students of L.T. course in the Central Pedagogical Institute, Allahabad. They were selected out of 100 L.T. trainees admitted to the institute during the 1977-78.

These students were grouped into two equivalent groups—experimental and control. The students in both the groups were matched in respect of age, educational qualifications, intelligence and attitude towards teaching.

Ahluwalia's Teacher Attitude Inventory was used to measure student teachers' attitude towards teaching. Cattel's Culture Fair Intelligence test was used to measure the subject's intelligence. Baroda General Teaching Competence Scale was used to rate general teaching competence of the subjects. Here, 't' test and Mann Whitney's test were used to test significance of difference. The following main conclusions were drawn from the study.

i. There is no significant difference in the relative effectiveness of supervisor feedback and that of peer feedback in developing general teaching competence in secondary student teachers.

ii. Supervisor feedback and peer feedback are equally effective in the retention of general teaching competence in secondary student teachers.

iii. There is no significant difference in the relative effectiveness of peer feedback and that of supervisor feedback in developing favourable attitude towards teaching in secondary student teachers.

STUDY-4

Title

A Comparative Study of the Effect of Microteaching under Simulated Conditions and Varying Sources of Feedback upon General Teaching Competence.

INVESTIGATORS

Dr. H. Visvesvaran, and
Dr. T.R. Soundararaja Rao,
Sri Ramakrishna Mission Vidyalaya,
Teacher's College,
Coimbatore (Tamil Nadu).

Investigators attempted to explore the relative effectiveness of peer feedback, and that of peer feedback together with college supervisor feedback in developing general teaching competence in secondary student teachers. Besides, the investigators attempted to study the comparative effectiveness of these two sources of feedback on the retention level of general teaching competence in secondary student teachers. The differential effect of these two sources of feedback on student teacher attitude towards teaching was also covered in the study.

The sample of the study consisted of 30 B. Ed. students who had opted English and Mathematics as their teaching subjects for the B. Ed. course. None of the students had previous teaching experience in high schools. These 30 students were allocated to two groups—control and experimental.

The study employed pretest-postest control group design. The control group was provided feedback by peers and the experimental group received feedback from peers plus the college supervisor. The student teacher attitude towards teaching was measured through Ahluwalia's Teacher Attitude Inventory and the general teaching competence was rated with Baroda General Teaching Competence Scale. Training in five skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples, was provided.

The main findings of the study are out lined below.

i. The peer feedback is as effective as feedback from peer plus college supervisor.

ii. There is no significant difference in the relative effectiveness of peer feedback and that of peer feedback plus college supervisor feedback in the retention of general teaching competence in secondary student teachers.

iii. There is no significant difference in the relative effectiveness of peer feedback and that of peer feedback plus college supervisor feedback in the development of favourable attitude towards teaching among secondary student teachers.

STUDY-5

Title

A Comparative Study of the Relative Effectiveness of Feedback given by Peer and College Supervisor, and Peer and Audiotape under Microteaching Setting.

INVESTIGATOR

Dr. (Mrs.) S. Bhouraskar,
Department of Education,
University of Indore,
Indore-452001.

Dr. Bhouraskar studied the relative effectiveness of peer plus supervisor feedback, and that of peer plus audiotape feedback in developing the general teaching competence in student teachers. The differential effect of the two sources of feedback upon the retention level of general teaching competence and the level of anxiety was also studied.

The sample of the study consisted of 20 preservice B.Ed. trainees who volunteered themselves for the study. The pretest-postest control group design was employed for conducting the study. These twenty student teachers were allocated to two groups—experimental and the control. They were matched in terms of sex, qualifications and age. Here, 't' test and Mann Whitney's test were used for analysing the data. The following are the main findings of the study.

i. There is no significant difference between the relative effectiveness of peer and supervisor feedback; and that of peer and audio-tape feedback in developing general teaching competence in secondary teachers.

ii. There is no significant difference between the level of retention of general teaching competence of student teachers receiving feedback from peers plus supervisor and those receiving feedback from peers plus audiotape.

iii. There is no significant difference in the level of anxiety of student teachers receiving feedback from peers plus supervisor and those receiving feedback from peers and audiotape.

STUDY-6

Title

A Comparative Study of Effect of Microteaching under Varying Sources of Feedback upon General Teaching Competence of Student Teachers and Their Attitude towards Teaching.

INVESTIGATORS

Davinder Pratap Asija,
Mrs. Nirmal Kumari,
Saraswati College of Education,
Charkhi Dadri (Haryana).

The investigators investigated into the relative effectiveness of peer feedback and that of college supervisor feedback in developing general teaching competence in pre-service secondary school teachers. Besides, they studied the relative effectiveness of the two sources of feedback on the retention of general teaching competence and development of attitude towards teaching in pre-service secondary teachers.

The sample of the study comprised 20 B.Ed. trainees. These were selected out of 100 B.Ed. trainees admitted in the Saraswati College of Education, Charkhi Dadri during the academic session 1977-78. It was an experimental study employing parallel group design with matching.

Ahluwalia's Teacher Attitude Inventory was used for measuring teacher attitude towards teaching. Baroda General Teaching Competence Scale was used to rate general teaching competence of student teachers. Cattell's Culture Fair Intelligence Test was used to measure general intelligence of student teachers. Five skills—Probing Questioning, Stimulus Variation, Reniforcement, Explaining, and Illustrating with Examples were developed in the student teachers.

The main conclusions of the study are out lined below.

i. Supervisor feedback is significantly more effective than peer feedback in developing general teaching competence in secondary student teachers.

ii. Supervisor feedback and peer feedback are equally effective in the rentention of general teaching competence among secondary student teachers.

iii. There is no significant difference in the relative effectiveness of peer feedback and that of college supervisor feedback in developing attitude towards teaching in secondary student teachers.

STUDY-7

Title

A Comparative Study of the Effects of Perceptual Modelling and Symbolic Modelling in Microteaching under Simulated Conditions on General Teaching Competence and Attitude towards Teaching of Student Teachers.

INVESTIGATOR

Dr. Punambhai Patel,
Shri. R.P. Ananda College of Education,
Borsad (Gujarat).

Dr. Patel attempted to study the relative effectiveness of perceptual modelling (live models) and symbolic modelling in developing general teaching competence in secondary student teachers. Besides, he studied the comparative effectiveness of these two formats of modelling in developing attitude towards teaching and retention of general teaching competence in student teachers. The sample of the study comprised 20 student teachers enrolled for B.Ed. class at Shri R. P. Ananda College of Education, Borsad during the academic session 1977-78. These student teachers were selected out of 128 students admitted in the college during the year.

Pretest-postest control group design was employed for conducting the study. Student teachers in the experimental and control groups were matched on sex, age, qualifications and the teaching subjects offered. Training in five skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples was provided to both the groups.

Baroda General Teaching Competence Scale and Ahluwalia's Teacher Attitude Inventory were used to collect data for the study.

Here 't' test was used for finding out the significance of difference between mean scores of the experimental and the control groups in regard to the selected variables. The main conclusions drawn from the study are given below.

i. Perceptual modelling and symbolic modelling are equally effective in developing general teaching competence among secondary student teachers.

ii. Perceptual and symbolic modelling are equally effective in the retention level of general teaching competence in secondary student teachers.

iii. Perceptual modelling and symbolic modelling are equally effective in developing positive attitude towards teaching in secondary student teachers.

STUDY-8

Title

A Comparative Study of the Effect of Perceptual and Symbolic Modelling upon General Teaching Competence of Student Teachers.

INVESTIGATORS

Dr. R.C. Hooda,
Shri P.S. Anand,
C.R. College of Education,
Rohtak (Haryana).

Investigators attempted to study the relative effectiveness of perceptual modelling and symbolic modelling in developing general teaching competence in secondary student teachers. Besides, they studied the comparative effectiveness of the two-formats of modelling on the retention of general teaching competence in the student teachers. The sample of the study comprised 20 student teachers enrolled for B.Ed. at C.R. College of Education, Rohtak during the academic session 1977-78. These student teachers were selected out of 300 students admitted in the college during the year.

Pretest-postest control group design with matching was employed for conducting the study. Two groups—control and the experimental—were formed. Student teachers in these groups were matched on sex, age, qualifications and the teaching subjects. Training in five skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples, was provided to both the groups.

Baroda General Teaching Competence Scale, Ahluwalia's Teacher Attitude Inventory, and State Trait-Anxiety Inventory by Spiel Berger, *et al.*, were used for measuring anxiety level of student teachers.

Here, 't' test and Mann Whitney's test were used for finding out the significance of difference between mean scores of the experimental group and the control group in regard to the selected variables. The main conclusions from the study are outlined below.

i. Perceptional modelling is significantly more effective than symbolic modelling in developing general teaching competence among secondary student teachers.

ii. Perceptual modelling is significantly more effective than symbolic modelling in the retention of general teaching competence in secondary student teachers.

iii. The level of anxiety of student teachers, exposed to perceptual modelling, is significantly lower than that of the student teachers exposed to symbolic modelling.

STUDY-9

Title

Effectiveness of Perceptual Modelling and Symbolic Modelling on the Development of General Teaching Competence of Student Teachers.

INVESTIGATOR

Dr. G.M. Patted,
Department of Post-Graduate
Studies in Education
Karnataka University (Dharwar).

Dr. Patted attempted to study the relative effectiveness of perceptual modelling and symbolic modelling in developing general teaching competence in seconday student teachers. The sample of the study comprised of 20 student teachers enrolled for B.Ed. at the University College of Education, Dharwar, during the academic session 1977-78. The student teachers were selected randomly out of 100 students admitted to the college during the year.

Pretest-postest control group design was employed for conducting the study. Two groups—control and the experimental—were formed. Student teachers in the two groups were matched on sex, age, and teaching experience. Training in five skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples, was provided to both the groups. Baroda General Teaching Competence Scale was used for assessing the general teaching competence of student teachers.

Rank test and Wilcoxon Matched—Pairs Sign tests were used for finding out the significance of difference between mean scores of the experimental group and the control group.

The study revealed that both the perceptual and the symbolic modelling are equally effective in the development of general teaching competence of student teachers.

i. Perceptual modelling and symbolic modelling are equally effective in developing general teaching competence among secondary student teachers.

ii. Perceptual and symbolic modelling are equally effective in the retention of general teaching competence in secondary student teachers.

iii. Training in microteaching does not affect the attitude of secondary student teachers towards teaching.

iv. Perceptual modelling and symbolic modelling are equally effective in developing favourable attitude towards teaching in secondary student teachers.

STUDY-10

Title

A Study of the Relative Effectiveness of Microteaching under Simulated Conditions and under Real Conditions upon the General Teaching Competence, Change in Anxiety Level, and Attitude towards Teaching.

INVESTIGATORS

Shri A. G. Bhalwanker,
Smt. M. M. Mahajan,
S. N. D. T. College of Education
for Women,
Karve Road, Pune-411004.

Investigators studied the relative effectiveness of microteaching approach under simulated conditions and under real classroom conditions in developing general teaching competence; the level of retention of general teaching competence; the change in the attitude towards teaching and the level of anxiety in secondary student teachers. The sample of the study comprised of 20 women student teachers. Pretest-Postest control group design was used for conducting the experiment. Both the groups, experimental and control, were trained in five teaching skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples. The following tools were used in the study.

i. Baroda General Teaching Competence Scale (BGTCS) was used for measuring general teaching competence of student teachers.

ii. Ahluwalia's Teacher Attitude Inventory (ATAI) was used for measuring student teacher attitude towards teaching.

iii. State-Trait Anxiety Inventory by Spielberger, *et al.* was used for measuring student teacher anxiety level.

Here, 't' test was used for finding out the significance of difference between mean scores of the experimental group and the control group in regard to the selected variables. The main findings of the study are outlined below.

i. There is no significant difference in the effectiveness of microteaching technique under simulated conditions and that under real classroom conditions in developing general teaching competence in secondary student teachers.

ii. There is no significant difference in the level of anxiety of student teachers trained through microteaching either under simulated conditions or under real classroom conditions.

iii. There is no significant difference in the attitude towards teaching of student teachers trained through microteaching approach either under simulated or real classroom conditions.

STUDY-11

Title

A Study of the Relative Effectiveness of Microteaching Technique under Simulated Conditions and under Real Conditions in Developing General Teaching Competence of Student Teachers.

INVESTIGATOR

R. C. Sadasivan,
Siddaganga College of
Education,
Tumkur—2 (Karnataka).

Shri Sadasivan studied the relative effectiveness of microteaching under simulated conditions and under real classroom conditions in developing general teaching competence; the level of retention of general teaching competence; and the level of anxiety in secondary student teachers. The sample of the study comprised 20 student teachers. Pretest-Postest control group design was used for conducting the experiment. Student teachers were divided into two groups and matched in terms of sex, age, teaching subjects and qualifications. Both the groups, experimental and the control were oriented to five teaching skills, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples The following tools were used in the study.

i. Baroda General Teaching Competence Scale (BGTCS) was used for measuring general teaching competence of student teachers.

ii. State-Trait Anxiety Inventory by Spielberger, *et al.* was used for measuring student teacher anxiety.

‘t’ test and Mann Whitney's test were used for testing the significance of difference between mean scores of the experimental group and the control group in regard to selected variables. The main findings of the study are given below.

i. There is no significant difference in the effectiveness of microteaching technique under simulated conditions and under real classroom conditions in developing general teaching competence in secondary student teachers.

ii. There is no significant difference in the level of anxiety of student teachers trained through microteaching approach either under simulated conditions or under real classroom conditions.

iii. There is no significant difference in the retention level of general teaching competences of student teachers trained either under simulated or under real classroom conditions.

STUDY-12

Title

A Comparative Study of the Effect of Simulated and Real classroom Conditions upon the General Teaching Competence and Attitude Among Teacher Trainees.

INVESTIGATOR

A.N. Joshi,
Adarsh Comprehensive College
of Education and Research,
Pune.

Shri Joshi studied the relative effectiveness of microteaching under simulated conditions and that of real classroom conditions in developing general teaching competence; the level of retention of general teaching competence and the development in the attitude towards teaching in secondary student teachers. The sample comprised 20 student teachers who were selected out of 150 student teachers admitted in the Adarsh Comprehensive College of Education, Pune. Parallel group design with matching was used for conducting the study. Both the groups—experimental and the control—were matched in respect of age, sex, teaching methods, qualifications and intelligence. The following tools were used in the study.

i. Baroda General Teaching Competence Scale (BGTCS) was used for assessing general teaching competence of student teachers.

ii. Ahluwalia's Teacher Attitude Inventory (ATAI) was used for measuring student teacher attitude towards teaching.

iii. Culture Fair Intelligence test developed by Cattell and Cattell was used for measuring the subjects' intelligence.

The main findings of the study are given below.

i. There is no significant difference in the effectiveness of microteaching technique under the simulated conditions and that under real classroom conditions in developing general teaching competence in secondary student teachers.

ii. There is no significant difference in the attitude towards teaching of student teachers trained through microteaching approach either under simulated or under real classroom conditions.

STUDY-13

Title

A Comparative Study of the Effectiveness of Standard Microteaching (teach-reteach with the Same Unit) and Modified Microteaching (teach-reteach with different units) on General Teaching Competence.

INVESTIGATOR

Mrs. C.G.D. Lima,
H.J. College of Education,
Bombay.

Mrs. Lima compared the general teaching competence of student teachers trained through microteaching with the same and the different teaching units in the 'reteach session'. The difference between student teacher attitude towards teaching as a result of variation in the teaching unit in 'reteach session' was also studied.

The sample of the study consisted of 16 B.Ed. student teachers. They were taken out of 156 students of Hansraj Jeevandas College of Education. Ahluwalia's Teacher Attitude Inventory (ATAI) was used for measuring attitude of student teachers towards teaching. Baroda General Teaching Competence Scale (BGTCS) was used for measuring general teaching competence of student teachers.

The experimental study involved parallel group design. 't' test and Mann Whitney's Test were used for analysing the data. The main findings of the study are given below.

i. There is no significant difference in GTC scores of student teachers trained through microteaching with the same or different teaching unit in the 'reteach session'.

ii. There is no significant difference between attitude towards teaching of student teachers trained through microteaching with the same or the different teaching unit in the 'reteach session'.

iii. There is no significant difference between mean gain (retention) scores of student teachers trained through microteaching with the same or different teaching units in the 'reteach' session.

STUDY-14

Title

A Comparative Study of the Effectiveness of Standard Microteaching (Teach-Reteach with the Same Unit) and Modified Microteaching (Teach Reteach with Different Unit) on General Teaching Competence and Attitude towards Teaching of Student Teachers.

INVESTIGATOR

Miss Vijaya Kamat,
Chembur Comprehensive College of
Education,
Bombay.

Miss Kamat compared the general teaching competence of student teachers trained through microteaching approach with the same and the different teaching unit in the 'reteach' session. She also studied whether the change in the teaching unit in the 'reteach' session brings about a significant change in student teacher attitude towards teaching.

The sample of the study comprised 20 B.Ed. trainees who offered themselves voluntarily for participation in the study. These were taken out of 115 students admitted in the Chembur Comprehensive College of Education, Bombay during 1977-78. Ahluwalia's Teacher Attitude Inventory was used for measuring teacher attitude towards teaching and student teacher general teaching competence was assessed through the use of Baroda General Teaching Competence Schedule.

The experimental study employed parallel group design with matching. Out of these twenty students, two groups of 10 student teacher were formed. One group was provided training in the acquisition of five teaching skills: Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples, through microteaching approach in which the teaching unit was kept the same in the 'reteach' session. The other group was given the same treatment except that the teaching unit in the 'reteach' session was changed.

't' test and Mann Whitney's Test were used to test the significance of difference in mean scores of the two groups.

The following are the main findings of the study.

i. There is no significant difference in general teaching competence scores of student teachers trained through microteaching with the same or the different teaching unit in the 'reteach' session.

ii. There is no significant difference between attitude of student teachers trained through microteaching with the same or different teaching unit in the 'reteach' session.

STUDY-15

Title

A Comparative Study of the Effectiveness of Microteaching under Simulated Conditions and Microteaching with Varying Class Size upon the General Teaching Competence and Change in Anxiety Level.

INVESTIGATORS

V.P. Gupta and
Dr. (Miss) R. Datta,
Regional College of Education,
Bhopal.

Investigators studied the effect of class size upon the general teaching competence of student teachers. They also studied as to whether the change in class size affects the level of anxiety of student teachers. The effect of class size on the retention of general teaching competence was also studied.

The sample of the study consisted of 25 student teachers. They were in the age group of 20-25 years. Twenty-one of these students were studying in the fourth years of B.Sc. (Hons.), B.Ed. course in the Regional College of Education, Bhopal during the academic session 1977-78. The remaining four students were from one year B.Ed. course of the same college. Three of the selected students left the college before the study was completed.

The experimental study employed parallel group design. Twelve and thirteen student teachers were allotted to the control and experimental groups respectively.

There were 9 student teachers in the control group and 13 in the experimental group ; later, 3 students dropped out from the control group.

't' test was used for finding out the significance of difference between mean gain scores of two groups with regard to the selected variables.

The main findings of the study are given below :

i. There is no significant difference in the general teaching competence of student teachers which were in either of the two groups.

ii. There is no significant difference in the retention level of general teaching competence of the two groups.

iii. The trait anxiety level of student teachers is not affected significantly when the number of students in the microclass is increased from 9 to 13.

iv. State-anxiety level of student teachers is affected significantly when the number of students in the microclass is increased from 9 to 13.

STUDY-16

Title

A Study to Compare the Effect of Varying the Number of Microteaching Cycles so as to Attain a Minimum Level of Performance in each Skill, namely, Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples on General Teaching Competence.

INVESTIGATOR

Smt. Shakuntala Patil,
D.P.B. Dayanand College of
Education,
Solapur.

The main objective of this study was to determine the number of microteaching cycles required for attaining the desired level of mastery over teaching skills. The sample of the study consisted of 10 B.Ed. trainees. These were selected out of 170 students admitted in the D.P.B. Dayanand College of Education, Solapur during the academic session 1977-78. Only those student teachers who were volunteered for the experiment taken.

The desired level of proficiency in each skill was to obtain a '5-point' rating on the 7 point scale of the observation schedule. The teaching skills required to be mastered by the student teachers were Probing Questioning, Stimulus Variation, Reinforcement, Explaining and Illustrating with Examples. The main finding of the study is that for acquiring a reasonable level of proficiency in teaching skills, practice of two microteaching cycles is required. The study further revealed that 5 student teachers needed more practice in one skill or the other. Two student teachers mastered the skill of Stimulus Variation in 3 and 3½ cycles. The investigator interpreted that longer time taken by them in acquiring proficiency in the skill of Stimulus Variation may be due to their personality patterns. The investigator, therefore, suggested that there is a need to study the relationship between the student teachers' personality and acquisition of proficiency in teaching skills.

S.C.E.R.T., West
Library
Calcutta
25/3, B C

Section-III

STUDIES AND DEVELOPMENT ABSTRACTS

The main theme of the study is to determine the relative effectiveness of different variations in components of microteaching. The findings of studies conducted in this regard are mentioned in Section I. Some other aspects of microteaching i.e., comparative effectiveness of MT and TT in the teaching of Hindi, relative effectiveness of microteaching approach in the case of teachers with and without teaching experience, transfer of practice of microteaching skills to classroom and conversational situations, and the effectiveness of a microlesson upon the skillfulness, impressiveness of the presentation upon pupil understanding, have also been studied Besides, a few researchers have developed microlessons in the subjects of science, social studies and Hindi. Abstracts of studies are given in this section.

STUDY-1

Title

A Comparative Study of the Effectiveness of MT and TT in Teaching Hindi with Reference to the Development of General Teaching Competence and Competence in Individual Skills.

INVESTIGATOR

Dr. D.L. Sharma,
B.T.T. College,
Gandhi Vidya Mandir,
Sardarshahr (Rajasthan).

Dr. Sharma conducted a study in order to find out relative effectiveness of microteaching and the traditional teacher training approach in the development of general teaching competence among student teachers teaching Hindi. Besides, the difference in the anxiety level of student teachers of the traditional teaching group and microteaching group was studied. The sample of the study consisted of 20 student teachers. These student teachers had no teaching experience and had offered Hindi as one of the teaching subjects. All of the student teachers had passed in the second division in their B.A. examination. These student teachers belonged to age group of 20-26 years.

Parallel group experimental design was used in the study. Both the group—experimental and the control—were matched in terms of age, sex, division in the B.A. examination, and teaching experience. In both the training approaches, practice in five teaching skills—Probing Questioning, Stimulus Variation, Reinforcement, Explaining, Illustrating with Examples, was provided. BGTCS was used for measuring the general teaching competence of student teachers. The study *inter alia* revealed that microteaching approach was more effective than the traditional teaching approach in the development of general teaching competence among student teachers teaching Hindi.

STUDY-2

Title

To Study the Effectiveness of Microteaching upon the General Teaching Competence of Pupil Teachers with Teaching Experience and without Teaching Experience.

INVESTIGATOR

Dr. S R. Nair,
Govt. Training College,
Trivandrum.

Dr. Nair attempted to study the effect of teaching experience upon the development of general teaching competence among student teachers trained through micorteaching approach. He also studied the relative effectiveness of traditional teacher training approach in developing general teaching competence among student teachers with teaching experience and without teaching experience.

There were two different sets of samples in the study. One sample consisted of 20 student teachers. Out of 200 student teachers in the college, these 20 student teachers volunteered themselves for the study. Of these 20 students, 10 were with teaching experience and 10 without teaching experience. Similarly, another group of 20 student teachers (10 with teaching experience and 10 without teaching experience) formed the second sample of the study.

Control group experimental design was used for the study. The practice in five teaching skills—Probing Questioning, Stimulus Variation, Reinforcement, Explaining, and Illustrating with Examples—was provided to the student teachers. BGTCS was used for measuring the general teaching competence of student teachers. The main conclusion drawn from the study was that teaching experience is not a factor affecting significantly the attainment of general teaching competence of student teachers trained either through the traditional training approach or the microteaching approach.

STUDY-3

Title

Transfer of Practice of M.T. Skills to Classroom and Conversational Situations.

INVESTIGATOR

S. Bhaskara,
Lecturer,
R.V. Teachers' College,
Bangalore.

Bhaskara investigated into the transfer of the practice of five microteaching skills to classroom situations. Besides, an attempt was made to investigate into the transfer of practice of five microteaching skills to social conversation situations. The researcher defined the conversational skill as the ability to communicate the ideas freely in a cordial atmosphere, on an equal footing with reference to the persons involved. The sample of the study consisted of 10 student teachers selected randomly out of 100 student teachers. The BGTCS was used for measuring general teaching competence of student teachers. Conversation skill rating scale developed by the researcher was used to measure the skill in conversation. The results of the study are given below.

	Gain Score	*Mean*	*SD*	*'t' Value*	*Level of Significance*
1. Gain in GTC	87	8·7	6·544	4·205	·01
2. Gain in Conversation ratings	34·5	34·5	3·686	2·95	·02

The study concluded that the practice in five microteaching skills is transferable to real classroom situations. Besides, the practice in five microteaching skills significantly improves the conversational skill competance of student teachers.

STUDY-4

Title

An Exploratory Study into the Effectiveness of a Microlesson upon the Skillfulness, Impressiveness of Presentation, and Pupil Understanding.

INVESTIGATOR

P.L. Kirkire,
Department of Education,
University of Indore,
Indore.

Kirkire conducted an exploratory indepth study into the effectiveness of a microlesson upon the skillfulness, impressiveness of presentation, and pupil understanding. The study was limited to one microlesson only. The lesson was prepared on the unit 'divisibility theorem by nine—an algebraic explanation'. The lesson was so developed that involved the maximum use of the skill of explaining. The study employed control group experimental design. Only presentation of four B.T.I. pupil teachers was analysed. The skillfulness, impressiveness of presentation of the student teachers were measured with the help of the tools developed by the investigator.

The following main conclusions were drawn from the study.

1. Practice in microlesson in the skill of explaining increases the skillfulness of the teacher. His presentation becomes clear, logical and fluent.
2. Practice in microlesson in the skill of explaining makes the impressiveness of presentation more lasting with regard to time.
3. Practice in microlesson in the skill of explaining interferes with the pupil learning or understanding and produces an adverse effect.

STUDY-5

Title

Development of Model Microlesson Plans for Practising the Skill of Explaining and the Skill of Reinforcement in Physical Science of IX Standard Syllabus.

INVESTIGATOR

Puttaramaiah,
BES College of Education,
Bangalore.

Puttaramaiah developed 10 microlessons for practising both the skills of Reinforcement and Explaining. These microlessons were tried out in simulated and real classroom conditions and finalized. The concepts selected for developing microlessons for both the skills are given below.

Skill of Reinforcement

		Concept	Standard
Microlesson	1	Erosion of Soil	IX
Microlesson	2	Chlorine	IX
Microlesson	3	Dynamics	IX
Microlesson	4	Equations of Motion	IX
Microlesson	5	Simple Machine	IX

Skill of Explaining

Microlesson	1	Molecules	IX
Microlesson	2	Work and Energy	IX
Microlesson	3	Conversion of Heat	IX
Microlesson	4	Working of the Steam Engine	IX
Microlesson	5	Rate of Chemical Reactions	IX

STUDY-6

Title

Development of Microlesson Plans For the Practice of Teaching Skills in Social Studies for Class VIII.

INVESTIGATOR

Dr. R.N.P. Barial,
Post-Graduate Deptt. of Education,
Patna University,
Patna.

Dr. Barial developed 10 microlessons for practising both the skills of introducing a lesson and probing questioning. Microlessons are in the subject of social studies for Class VIII. These microlessons were tried out in simulated and real classroom conditions and were finalized. The concepts selected for developing microlessons are given below.

Skill of Introducing a Lesson

		Concept	Standard
Microlesson	1	Factors of Production	VIII
Microlesson	2	Joint Family	VIII
Microlesson	3	Wants	VIII
Microlesson	4	Election	VIII
Microlesson	5	Judiciary	VIII

Skill of Probing Questioning

Microlesson	1	Patna Municipal Corporation	VIII
Microlesson	2	Gram Panchayat	VIII
Microlesson	3	Wealth	VIII
Microlesson	4	State	VIII
Microlesson	5	Food Problem	VIII

STUDY-7

Title

Development of Microlessons for Practising the Skills of Stimulus Variation, Illustrating with Examples, Presentation and Communication—Dramatising, Reinforcement, Silence and Non-Verbal Cues in Hindi Teaching to Class VIII.

INVESTIGATOR

A.N. Joshi,
Department of Education,
Hindu College,
Moradabad.

Joshi developed microlessons for practising the skills of Silence and Non-Verbal Cues, Stimulus Variation, Illustrating with Examples, Reinforcement, and Presentation and Communication—Dramatising. These microlessons were tried out in simulated and real classroom conditions and were finalized.

STUDY-8

Project

Development of Microlesson Plans for Core Teaching Skills

PROJECT TEAM : Dr. K.K. Sharma,
Mrs. Walia,
Mr. Sidhu,
D.A.V. College of Education,
Abohar (Punjab).

The team undertook a project on the development of sample microlesson plans for Core Teaching Skills. The team developed theoretical framework and format for writing microlesson plans. General criteria for the skills of reinforcement, fluency of questions, probing questioning, explaining, illustrating with examples, introducing the lessons, silence and non-verbal cues, recognising attending behaviour, stimulus variation, encouraging pupil participation, were developed for writing the microlesson plans. Draft plans for five skills vis-a-vis skill of reinforcement, probing questioning, explaining, illustrating with examples and stimulus variation were developed. The microlesson plans were tried out and were refined. The sample microlesson plans have been mimeographed for wider circulation.

REFERENCES

Abraham, P.P., Effectiveness of Microteaching in the Development of the Skill of Questioning. Unpublished M.Ed. Dissertation, M.S. University of Baroda, Baroda, 1974.

Allen, D.W. and Fortune, J.C., *An Analysis of Microteaching: New Procedure in Teacher Education. Microteaching : A Description,* School of Education, Stanford University, 1966.

Allen, D.W., and Ryan, K.A., *Microteaching,* Addison-Wesley, 1969.

Aubertine, H., An Experiment in the Set Induction Process and Its Application in Teaching. Doctoral Thesis, Stanford, California, 1964.

Belt, W.D., Microteaching—Observed and Critiqued by a Group of Trainees. Presented at Annual Meeting of AERA, New York (ED 011890).

Bhattacharya, S.P., Microteaching in the Training of Polytechnic Teachers. Unpublished Doctoral Dissertation, M.S. University, Baroda, 1974.

Brown, G.A., Microteaching—An Innovation in Teacher Education. *Education for Teaching,* 1971, pp. 86, 11-15.

— *Microteaching—Programme of Teaching Skills,* Methuen, 1975.

Chaudasama, R.R., Trying out of Microteaching Procedure in Student Teaching. Unpublished M.Ed. Dissertation, M.S. University of Baroda, Baroda, 1971.

Das, R.C. *et al.*, A Study of the Effectiveness of Microteaching in Training of Teachers, NCERT, New Delhi, 1976 (Mimeo).

— An Experimental Study of Differential Effectiveness of Microteaching Components, NCERT, New Delhi, 1977 (Mimeo).

— *Different Effectiveness of Microteaching,* NCERT, New Delhi, 1980.

Garner, J., The Nature of Teaching and the Effectiveness of Teachers in Lomas, D. *The Education of Teachers in Britain,* J. Wiley and Sons, 1973.

Getzels, J.W. and Jackson, P.W., The Teacher's Personality and Characterstics. In Gage, N.L. (ed.) *Handbook of Research on Teaching*, Rand Menally, 1963.

Jangira, N.K., Microteaching—A Step in Learning to Teach, Department of Teacher Education, NCERT, New Delhi, 1978 (Mimeo).

— *Teacher Training and Teacher Effectiveness, An Experiment in Teacher Behaviour*, National Publishing House, Delhi, 1979.

— and, Singh, Ajit, *Core Teaching Skills: Microteaching Approach*, NCERT, New Delhi, 1982.

Jangira, N. K. *Technology of Classroom Questioning*, National Publishing House, Darya Ganj, New Delhi, 1983.

Joshi, S.M., Effectiveness of Microteaching Technique in the Preparation of Teachers. Doctoral Thesis, M.S. University of Baroda, Baroda, 1977.

Kallenbach, W.W. and Gall, M.D., Microteaching versus Conventional Methods in Training Elementary Intern Teachers. *J. Edu. Res.*, 1969, pp. 63, 136-141.

Lalitha, M.S., An Inquiry into Classroom Instruction. Doctoral Thesis, M.S. University of Baroda, Baroda, 1977.

Marker, N.S., A Report on an Experiment in Developing Skills of Classroom Teaching of Student Teachers by Simultation and New Technique of Supervision, *Journal of Gujarat Research Society*, 1973, pp. 35, 62-71.

McKnight, P., Microteaching in Teacher Training: A Review of Research in Education, 1971, pp. 6, 24-38.

Ministry of Education *Education Commission Report*, Ministry of Education, New Delhi, 1949.

— *Education Commission Report on Secondary Education*, Ministry of Education, New Delhi, 1953.

— *Education and National Development: Report of the Education Commission*, Ministry of Education, 1966.

— *Report of the Study Group on Elementary Teacher Education.* Ministry of Education, 1964.

MORSE, K.R, KYSILKA, M.L. and DAVIS, O.L., *Effects of Different Types of Supervisory Feedback on Teacher Candidates' Development of Refocussing Behaviours.* Research and Development Centre for Teacher Education, University of Texas, Report Series No. 48, 1970.

MORRISON, A. and McINTYRE, D., *Teacher and Teaching*, Penguin, 1973.

PASSI, B.K., Effect of Instructional Material and Feedback upon the Development of Certain Teaching Skills. Doctoral Thesis, M.S. University of Baroda, Baroda, 1977.

—, *Becoming Better Teacher—Microteaching Approach.* Sahitya Mudranalaya, Ahmedabad, 1976.

— and SHAH, M.M., *Microteaching in Teaching Education*, Centre of Advanced Study in Education, Baroda, 1974.

SHARMA, K.K., Effect of Different Techinques of Feedback upon the Attainment of Teaching Skills Related to Stimulus Variation Among Teachers. Doctoral Dissertation, M.S. University of Baroda, Baroda, 1976.

SINGH, AJIT, Source of Feedback—Their Comparative Effectiveness in Microteaching (in press).

SINGH, L.P., Classroom Interaction, Microteaching and Modified Teacher Behaviour. Unpublished Doctoral Dissertation, M.S. University, Baroda, 1974.

VAZE, N.A., Effect of Modelling and Microteaching in the Acquisition of Certain Skills in Questioning. Doctoral Study, M.S. University, Baroda, 1976.

S.C.E.R.T., West Bengal
Library
Calcutta
25/3, B. C. Road

Form No. 3.

PSY, RES.L-1

Bureau of Educational & Psychological Research Library.

The book is to be returned within the date stamped last.

....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....
....	....	....

WBGP-59/60-5119C-5M

D7

विद्ययाऽमृतमश्नुते

एन सी ई आर टी
NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING